

Great East Lake Quadrangle, Maine

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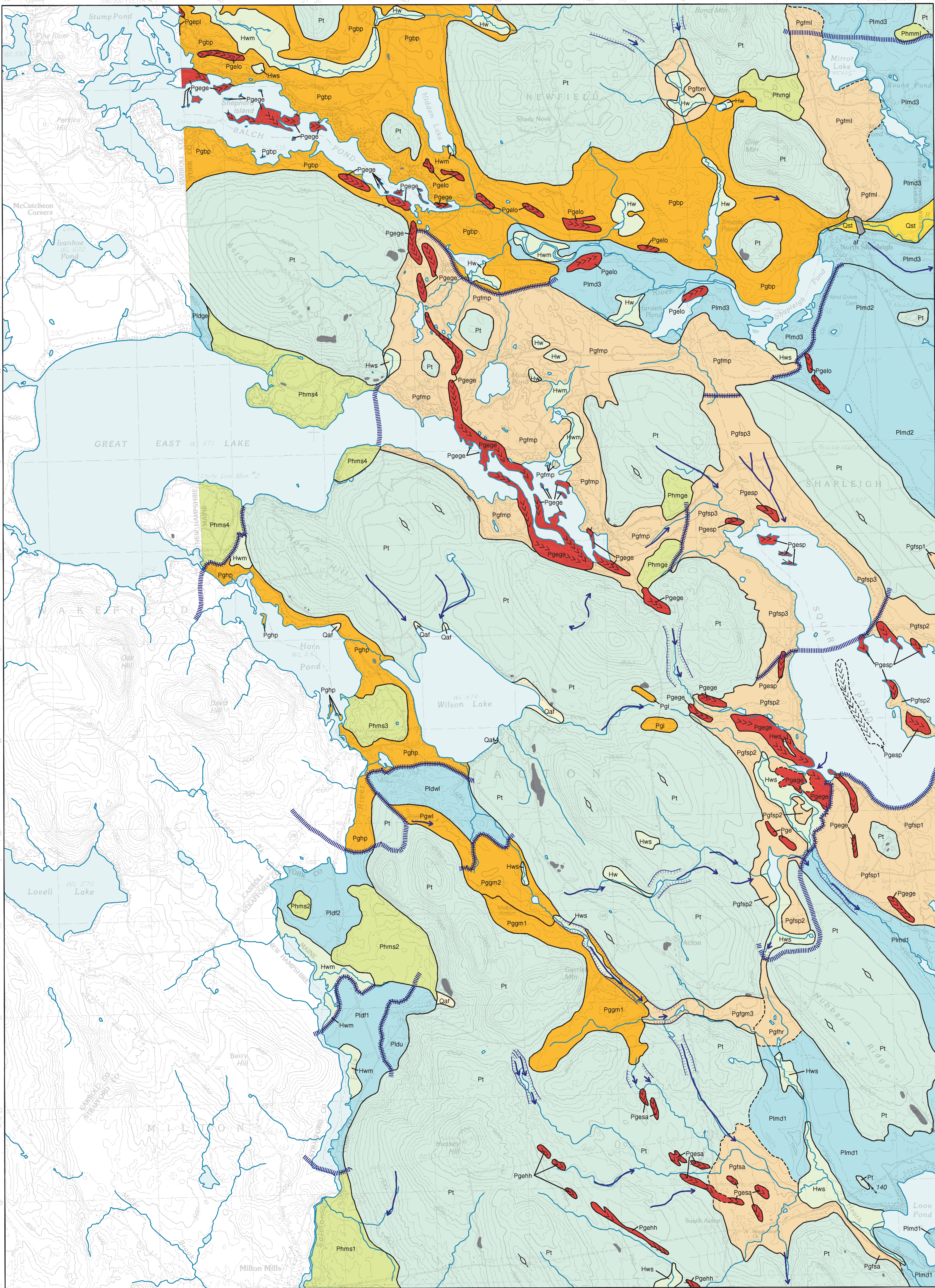
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For additional information,
see Open-File Report 97-61.

Surficial Geology



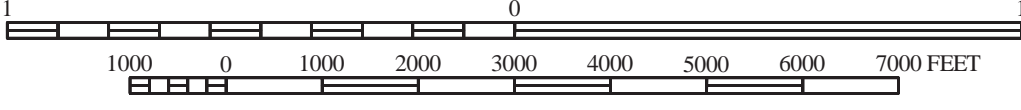
SOURCES OF INFORMATION

Surficial geologic mapping by Jon C. Boothroyd completed during the 1991 field season; funding for this work provided by the U.S. Geological Survey STATEMAP program.



Quadrangle Location

SCALE 1 : 24,000



CONTOUR INTERVAL 20 FEET



Topographic base from U.S. Geological Survey Great East Lake quadrangle, scale 1:24,000 using standard U.S. Geological Survey topographic map symbols.

The use of industry, firm, or local government names on this map is for location purposes only and does not implicate responsibility for any present or potential effects on the natural resources.

Qst	Stream terraces - Coarse to fine sand and gravel forming postglacial terraces cut by the Little Ossipee River.
Qaf	Alluvial fans - Coarse to fine sand and gravel deposited on slopes of postglacial and/or presently-active alluvial fans
Hw	Freshwater wetlands - Wetlands with variable vegetation and open water areas. Hwm - Marsh Hws - Swamp
Pld	Glacial lacustrine deposits - Sand and gravel of delta plain (topset) beds and poorly exposed delta slope (foreset) beds. Delta plains are characterized by flat-topped, low gradient surfaces usually dipping less than 6 m/km (30 ft/mile). Pldf ₂ - Deltas of the Salmon Falls drainage Pldu - Delta of the Salmon Falls drainage Pldwl - Delta of Wilson Lake area Pldge - Delta of the Great East Lake area Plmd ₃ - Deltas of the Mousam Lake drainage
Pgf	Glacial alluvial fans and plains - Sand and gravel deposits comprised of: high gradient alluvial fans that drain off the till uplands with gradients of up to 18 m/km (95 ft/mile) and gravel boulders up to 30 cm (1 foot) long axis; and lower-gradient alluvial plains that may be fan-shaped and occur at lower elevations along a given valley with gradients ranging from 6 m/km (30 ft/mile) to over 10 m/km (50 ft/mile) and average largest clast sizes that range from 10 to 30 cm (4 in to 1 ft) long axis. Pgfms ₂ - Acton area Pgfsa - South Acton area Pgflhr - Hubbard Ridge area Pgfspl ₃ - Square Pond area Pgfmpp - Moose Pond area Pgfbm - Bond Mtn. area Pgfnl - Mirror Lake area
Pg	Ice-marginal glacial deposits - Scattered high terraces of sand and gravel deposited against till-mantled hillsides.
Pg	Glacial hummocky sand and gravel - Sand and gravel deposits with either somewhat hummocky morphology or some internal interbeds of diamicton. Pggm ₂ - Gerrish Mtn. area Pgghp - Balch Pond area Pgw1 - Wilson Lake area Pgph - Horn Pond area

Pge	Esker deposits - Sharp-crested sinuous ridges up to 100 ft (30 m) in relief, and up to 5,500 ft (1,700 m) in segment length, with 100-800 m longitudinal separation between segments. Some segments are parallel in a semi-reticulate pattern composed of clast-supported boulder gravel with a coarse sand matrix (average largest L _{axis} of clasts up to 50 cm). Pgepl - Province Lake system Pgege - Great East Lake system Pgeho - Little Ossipee River system Pgese - Square Pond system Pgheh - Hussey Hill system Pgesea - South Acton system
Phm	Hummocky moraine deposits - Irregularly shaped mounds and small hills with up to 40 ft (12 m) of internal relief and 120 feet (35 m) of total relief that are comprised of interstratified debris-flow till and ice-marginal fluvial and lacustrine deposits. Phms ₁₋₄ - Moraines of the Salmon Falls - Great East Lake drainage Phmge - Moraines of the Great East Lake drainage Phmgi - Moraine of the Gile Mtn. area Phmnd - Moraine of the Mirror Lake area
Pt	Till - Slightly to moderately compacted, light brown to dark-yellowish-brown diamicton that consists of a non-stratified mixture of silt, sand, pebbles, cobbles, and boulders.
af	Artificial fill - Man-made unit. May be composed of any material. Commonly seen as highway and railroad embankments, and landfills.
	Bedrock exposures
	Contact - Boundary between map units; dashed where very approximate.
	Glacial striations on bedrock - Arrow indicates inferred ice-movement direction; number is azimuth (in degrees) of flow direction.
	Streamlined hill - Hill shaped by glacial processes and reflecting regional ice flow.
	Crest of esker segment - Trend of sand and gravel ridge. Chevrons point in the known or inferred direction of meltwater flow.
	Ice-marginal position - Mapped or inferred glacial ice-margin position occupied during stagnation-zone retreat.
	Large meltwater channel - Channel eroded by meltwater flow. Arrow indicates known or inferred flow direction.
	Meltwater or meteoric stream channel - Channel eroded by meltwater flow or later meteoric runoff. Arrow indicates known or inferred flow direction.

USES OF SURFICIAL GEOLOGY MAPS

A surficial geology map shows all the loose materials such as till (commonly called loess), sand and gravel, or clay, which overlie solid ledge (bedrock). Bedrock outcrops and areas of abundant bedrock outcrops are shown on the map, but varieties of the bedrock are not distinguished (refer to bedrock geology map). Most of the surficial materials are deposits formed by glacial and deglacial processes during the last stage of continental glaciation, which began about 25,000 years ago. The remainder of the surficial deposits are the products of postglacial geologic processes, such as river floodplains, or are attributed to human activity, such as fill or other land-modifying features.

The map shows the areal distribution of the different types of glacial features, deposits, and landforms as described in the map explanation. Features such as striations and moraines can be used to reconstruct the movement and position of the glacier and its margin, especially as the ice sheet melted. Other ancient features include shorelines and deposits of glacial lakes or the glacial sea, now long gone from the state. This glacial geologic history of the quadrangle is useful to the larger understanding of past earth climate, and how our region of the world underwent recent geologically significant climatic and environmental changes. We may then be able to use this knowledge in anticipation of future significant changes for long-term planning efforts, such as coastal development or waste disposal.

Surficial geology maps are often best used in conjunction with related maps such as surficial materials maps or significant sand and gravel aquifer maps for anyone wanting to know what lies beneath the land surface. For example, these maps may aid in the search for water supplies, or economically important deposits such as sand and gravel for aggregate or clay for bricks or pottery. Environmental issues such as the location of a suitable landfill site or the possible spread of contaminants are directly related to surficial geology. Construction projects such as locating new roads, excavating foundations, or siting new homes may be better planned with a good knowledge of the surficial geology of the site. Refer to the list of related publications below.

OTHER SOURCES OF INFORMATION

- Boothroyd, J. C., 1997, Surficial geology of the Great East Lake 7.5-minute quadrangle, York County, Maine: Maine Geological Survey, Open-File Report 97-61, 9 p.
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- Thompson, W. B., 1979, Surficial geology handbook for coastal Maine: Maine Geological Survey, 68 p. (out of print)
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- Thompson, W. B., Crossen, K. J., Borns, H. W., Jr., and Andersen, B. G., 1989, Glaciomarine deltas of Maine and their relation to late Pleistocene-Holocene crustal movements, in Anderson, W. A., and Borns, H. W., Jr. (eds.), Neotectonics of Maine: Maine Geological Survey, Bulletin 40, p. 43-67.